

WHAT IS CLAIMED IS:

A structural assembly comprising:

a first pre-cured assembly; and

a 3-D woven textile pre-form that is coupled to said first pre-cured assembly with a film adhesive, wherein said first pre-cured assemblies, said 3-D woven textile pre-form, and film adhesive are cured to form the structural assembly.

2. The structural assembly of Claim 1 further comprising: at least one additional assembly wherein said at least one additional assembly is coupled and cured to said first pre-cured assembly and said 3-D woven textile preform with a film adhesive.

3. The structural assembly of Claim 2, wherein said at least one additional assembly is a metal assembly or a pre-cured assembly.

4. The structural assembly of Claim 2, wherein said first pre-cured assembly and said at least one additional assembly are pre-cured laminated composite structures.

5. The structural assembly of Claim 1, wherein said 3-D woven textile pre-form is impregnated with an uncured resin.

6. The structural assembly of Claim 2, wherein said first pre-cured assemblies, said 3-D woven textile pre-form, and film adhesive are cured in an autoclave with heat and pressure.

7. The structural assembly of Claim 2, where said pressure is applied with a pressure intensifier located proximate to said pre-cured assemblies and said 3-D woven textile pre-form.

The first state of the first sta

₽÷

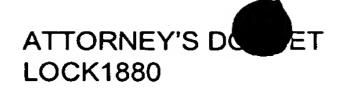
5

10

15

20

30





8. The structural assembly of Claim 2, wherein said pre-assemblies, said 3-D woven textile pre-form, and film adhesive are cured with a low temperature vacuum bag.

- 9. The structural assembly of Claim 2, wherein said pre-assemblies, said 3-D woven textile pre-form, and film adhesive are cured with an E-Beam cure resin system.
  - 10. The structure assembly of Claim 2, further comprising composite overwrap plies on the exterior surface of said 3-D woven textile pre-form.
  - 11. The structural assembly of Claim 2, wherein said pressure intensifier comprises a flexible material that forces said 3-D woven textile against said first pre-cured assembly and said at least one additional assembly.

12. The structural assembly of Claim 1, wherein said 3-D woven textile further comprises at least one fiber woven through critical intersection zones.

The Hall will be the than the that the that the will the that the will be that the the the term of the than the term of the te

10

15

A method of forming structural assemblies, comprising the steps

affixing a first adhesive film in between a first pre-cured assembly and a 3-D woven textile pre-form;

5

affixing an additional adhesive film between at least one additional precured assembly and said 3-D wøven textile; and

curing said adhesive firms to form the structural assembly.

10

The method of Faim 13, wherein said 3-D woven textile pre-form 14. is impregnated with an uncured resin.

The there are some order of the three from the

The method of Claim 13, wherein said first pre-cured assembly 15. and said at least one additional pre- cured assembly are pre-cured, laminated composite structures.

15

The method of Claim 14, wherein said step of curing said adhesive films, said 3-D woven textile pre-form, and film adhesive is implemented in an autoclave with heat and pressure.

20

17. The method of Claim 16, where said pressure is applied with a pressure intensifier located proximate to said pre-cured assemblies and said 3-D woven textile pre-form.

The method of Claim 16, wherein said step of curing is implemented within a low temperature vacuum bag.

19. The method of Claim 16, wherein said step of curing is implemented with an E-Beam cure resin system.

30

The method of Claim 16, further comprising the step of applying composite overwrap plies on exterior surfaces of said 3-D woven textile pre-form.

Shoch

Gray Cary\AU\4038851.1 103705-991880





The method of Claim-17, wherein said pressure intensifier comprises a flexible material that forces said 3-D woven textile against said first pre-cured assembly and said at least one additional pre-cured assembly.

22. The method of Claim 21, wherein said flexible material is rubber.

23. The method of Claim 13, wherein said 3-D woven textile further comprises at least one fiber woven through critical intersection zones.





24. A method of forming structural assemblies with pre-cured laminated composite structures, comprising the steps of:

affixing a first adhesive film in between a first pre-cured laminated composite structures and a 3-D woven textile pre-form;

affixing an additional adhesive film between at least one additional precured laminated composite structures and said 3-D woven textile; and

curing, with heat and/or pressure, said adhesive films, said first pre-cured laminated composite structures, said at least one additional pre-cured laminated composite structures and a 3-D woven textile pre-form to form the structural assemblies.

25. The method of Claim 24, wherein said 3-D woven textile pre-form is impregnated with an uncured resin.

26. The method of Claim 25, where said pressure is applied with pressure intensifiers located proximate to said pre-cured laminated composite structures, and said 3-D woven textile pre-form.

27. The method of Claim 26, wherein said step of curing is implemented within a low temperature vacuum bag.

28. The method of Claim 26, wherein said step of curing is implemented with an E-Beam cure resin system.

The method of Claim 26, further comprising the step of applying composite overwrap plies on exterior surfaces of said 3-D woven textile pre-form.

30. The method of Claim 26, wherein said pressure intensifier comprises a flexible material that forces said 3-D woven textile pre-form against said first pre-cured laminated composite structures and said at least one additional pre-cured laminated composite structures.

Gray Cary\AU\4038851.1 103705-991880

10

The thirth of the term of the

6

30

The method of Claim 30, wherein said flexible material is rubber. 31.

Aurther comprises at least one fiber woven through critical intersection zones.

Add CIH

Cadd P3

CH The method of Claim 24, wherein said 3-D weven textile pre-form